UNDERSTAND THE IMPACT
ENERGY EFFICIENT TRANSFORMERS

TRANSFORMERS POWER INDUSTRIAL, COMMERCIAL AND RESIDENTIAL APPLICATIONS. THEY REMAIN A KEY AND ESSENTIAL PART OF OUR NATION'S ELECTRICAL INFRASTRUCTURE.

"*What are the new DOE Energy Efficiency levels that will be in effect next year for U.S. transformers? And how will that affect my SolaHD transformers?*"

Improving the energy efficiency of distribution transformers is a goal of the U.S. Department of Energy (DOE). They have the legal authority to define efficiency levels and enforce compliance. In addition, environmentally conscious consumers and individuals also recognize that buying a higher energy efficiency transformer will have both a financial and environmental impact in the coming years.

SolaHD manufactures transformers of unsurpassed quality, right here in the United States. We know transformers are a key part of the U.S. infrastructure. Our low-voltage, dry-type models will meet the new DOE2016 energy-efficiency requirements for distribution transformers.

SOLAHD

EMERSON

EMERSON. CONSIDER IT SOLVED.

LEGISLATION THAT GOES INTO EFFECT ON JANUARY 1ST 2016.

The DOE has worked over the last few years to establish new and more stringent energy efficiency levels for distribution transformers. A new law will go into effect January 1, 2016 making these new levels mandatory. This new law primarily affects three-phase efficiency levels. Single-phase levels will remain the same. Please refer to the table below for the efficiency levels which apply to the low-voltage dry-type transformers that SolaHD manufactures; these are distribution transformers that include low temperature rise, K-Factor and general purpose. There are additional distribution transformers affected. Those are defined in the DOE's CFR (Code of Federal Regulations) title 10, part 431 (also known as DOE 10 CFR p431). It was published in the Federal Register Vol. 78, No. 75 on Thursday April 18, 2013. According to the DOE, the new efficiency levels are expected to reduce energy losses by an average of 18% in low-voltage dry-type distribution transformers over the current TP-1 efficiency levels over the life of the new program. To help put these benefits in perspective, over a 30 year period the DOE projects energy savings up to 3.63 quadrillion BTUs and $12.9 billion. In addition, about 265 million metric tons of carbon dioxide emissions will be avoided, that's equivalent to the annual greenhouse gas emissions of about 52 million automobiles.

TRANSFORMER TP-1 (2007) TO DOE2016 ENERGY EFFICIENCY LEVEL CHANGES COMPARISON — DOE2016 ENFORCED BY JANUARY 1, 2016

Note: Efficiency testing is done at 35% loading.

Single-Phase		
kVA	01/01/2007 and 01/01/2016 Eff %	DOE2016 and 01/01/2016 Eff %
15	97.7	97.7
25	98	98
37.5	98.2	98.2
50	98.3	98.3
75	98.5	98.5
100	98.6	98.6
167	98.7	98.7
	No Change in 2016	

Three-Phase		
kVA	01/01/2007 Eff %	DOE2016 and 01/01/2016 Eff %
15	97	**97.89**
30	97.5	**98.23**
45	97.7	**98.4**
75	98	**98.6**
112.5	98.2	**98.74**
150	98.3	**98.83**
225	98.5	**98.94**
300	98.6	**99.02**
500	98.7	**99.14**
	Three-Phase Affected	

Some effects of the legislation:

A transformer under normal operation is always energized, thus making any energy efficiency improvements more significant over an extended period of time. This means that customers will be rewarded in two ways:

1. They are reducing greenhouse gas emissions and there is an economic payback through reduced energy costs overtime. Considering the life expectancy of a transformer and the fact that the transformer will be on 24 hours a day, 7 days a week for the next 25-30 years, even small energy efficiency improvements will pay dividends over the life of the transformer.
2. It will generate less heat. In many cases this translates into lower costs to cool the environment in which they are utilized equating into more savings not easily identified in calculations.

It is important to note that the mandated energy efficiency levels are already hovering around 98-99%, depending on the type of transformer and ratings. This means that any further efficiency improvements become more challenging to achieve. Typically they will require more and/or better core and conductor materials. In most cases, this will directly impact the cost of the transformer. However, as noted above, there is an economic benefit to offset the higher initial transformer costs overtime. SolaHD is making every effort to optimize our DOE2016 designs to minimize cost impacts, but expect prices to be higher throughout the transformer industry.

HOW SolaHD IS SUPPORTING THIS LEGISLATION AND OUR CUSTOMERS.

The end result of the new legislation is a lower environmental impact and a cost savings derived from decreased energy use for our customers. SolaHD supports this change, and the environmental benefits our society will receive as a result. SolaHD has a long tradition as a high quality, U.S. manufacturer of low voltage general purpose distribution transformers. We are proud to offer transformers meeting the most stringent energy efficiency requirements today and will be in a position to support the migration to the new DOE 2016 higher efficiency designs for our valued partners and customers, beginning in the latter half of 2015 and into 2016.

SOLAHD

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